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222
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A.D. 1892. Dec. 23. N° 23,759.

LESOURD'S Complete Specification.

3 Dec. 9, 1892

222-3 1893

(2 SHEETS)

SHEET 1.

SHEET 2.

329. Metallic [illegible] Closing Vessels, Casks, Soda Water, Valved.

FIG. 1

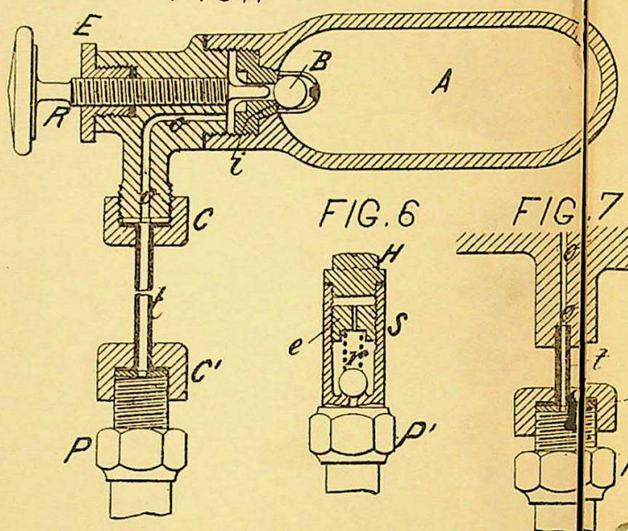


FIG. 6

FIG. 7

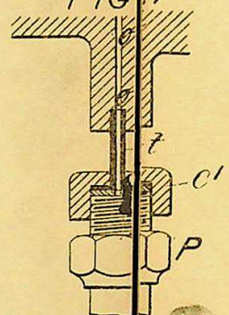


FIG. 2

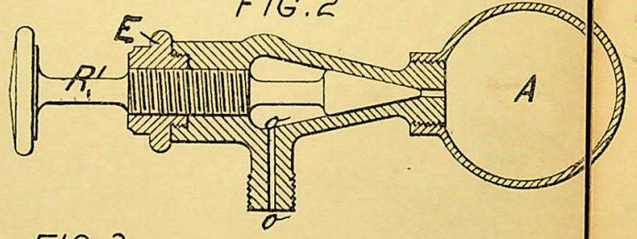


FIG. 3

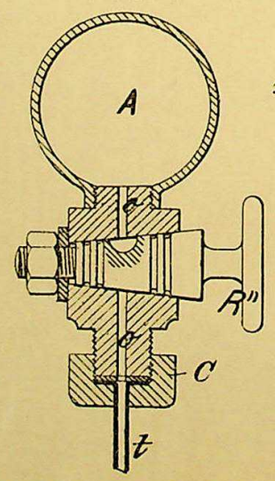


FIG. 4

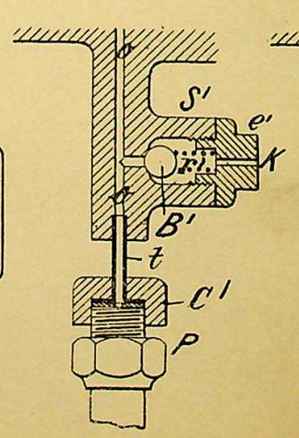
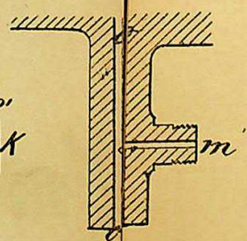
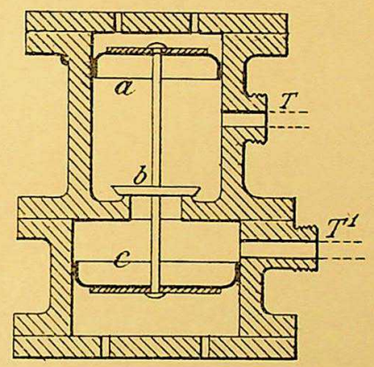


FIG. 5





[This Drawing is a reproduction of the Original, on a reduced scale]

23,759-92

London
for He[illegible]
by Darling and Son Ld.
Stationery Office. 1893.
Malby & Sons, Photo-Litho.

N° 23,759 A.D. 1892

Date of Application, 23rd Dec., 1892
Complete Specification Left, 22nd Sept., 1893—Accepted, 9th Dec., 1893

PROVISIONAL SPECIFICATION.

Improvements in and relating to Apparatus for Inflating Pneumatic Tyres for Wheels of Velocipedes and other Vehicles.

I, GEORGES LESOURD, of 36 Rue du Cherche Midi, Paris, in the Republic of France, Engineer, do hereby declare the nature of this invention to be as follows:—

My invention relates to apparatus for inflating pneumatic tyres for wheels of velocipedes and other vehicles by means of carbonic acid or other liquefied gas.

It is well known that nearly all wheels of velocipedes are now provided with pneumatic tyres forming an air chamber into which air is introduced at a pressure which varies according to the diameter of the tyre and the weight of the cyclist. On this pressure depends the proper operation of the apparatus.

The air chambers of these pneumatic tyres of various constructions have a nozzle containing a valve which opens inwardly.

When the pneumatic tyre is to be inflated this nozzle is put in communication with a small pump which is in most cases a hand pump. Whether this pump be absolutely free or be fixed to a rigid part of the machine or whether one of these rigid parts forms the body of the pump, its operation is always delicate and difficult especially when the pressure in the interior of the pneumatic tyre has attained a certain degree.

It is moreover liable to get out of order and, preventing the inflation, altogether render the machine unserviceable.

Some cyclists often ride under disadvantageous conditions with two slack or soft pneumatic tyres, because they try to use their pumps as little as possible.

In order to remedy these inconveniences I employ small reservoirs of variable capacity and with sufficiently strong walls for containing liquid carbonic acid or any other liquefied gas at a very high pressure.

Liquefied gas has amongst other advantages that of always giving an invarying pressure as long as liquid is in the presence of gas.

This reservoir is provided with a cock suitably arranged and screwed or otherwise fixed either directly or by means of a small tube of copper or india rubber upon the nozzle of the pneumatic tyre.

I may thus introduce into the pneumatic tyre the desired quantity of gas to obtain the proper degree of resistance which the cyclist is able to determine by hand.

It will be understood that my reservoirs may be of any desired form and capacity, and particularly of spheric form by reason of the high resistance it offers; and that they may be made of any desired material especially of aluminium for diminishing their weight as much as possible. For closing such reservoirs I may use any system of cock, valve or the like which may be deemed suitable.

Besides the closing devices hereinafter mentioned by way of example I may particularly employ what is known as Stern's closing device.

I will now proceed to describe certain special arrangements.

In order that the cyclist may not inflate the pneumatic tyre too much and cause its rupture I may make reservoirs containing only the gas necessary for a single charge.

In this case these very small reservoirs may be arranged in a box in rows of six, twelve or any desired number.

For each inflation the cyclist completely deflates the pneumatic tyre, fixes the reservoir upon the nozzle and may let all the gas pass into the interior of the tyre.

I may also place a certain number of these reservoirs upon a collector and use

successively each reservoir by putting the collector in communication with the pneumatic tyre.

In the case of reservoirs containing several charges I may use for example an arrangement comprising a reservoir for liquefied gas, a valve having a very long screw spindle furnished with a point which can lift a ball from its seat a counter nut being provided for making a tight joint.

The gas escaping through a channel passes into the pneumatic tyre to which the apparatus is connected either directly or by means of a tube with two nuts.

I may also employ amongst others a simple spindle cock or valve, or plug cock or valve.

To avoid the possibility of rupture of the pneumatic tyre in these kinds of apparatus I may employ a ball valve opening outwards and branching from a channel, the said ball being held by a spring under suitable tension which can be regulated by a nut.

This valve rises as soon as the pressure attains the desired limit in the pneumatic tyre, which is noticed by the escape of gas through one of the channels.

In lieu of this valve or in combination with it I may employ a pressure gauge, but such complications are not well adapted for practical purposes.

I sometimes provide upon the pneumatic tyre a second adjutage with a safety valve opening outwards and held by a spring the tension of which may be regulated by a nut. This valve is hermetically closed at ordinary times by a plug which is removed only when the inflation is to be effected.

Reservoirs of greater capacity and with a regulated outflow have the advantage of enabling the cyclist to always keep the pneumatic tyre in the desired state of hardness. In case it is deemed suitable I fix these reservoirs to a part of the velocipede or use one of these rigid parts as a reservoir.

In the case of reservoirs of large capacity which are used especially by merchants and manufacturers of velocipedes who have to effect many inflations and who use at present large pumps. I may place upon these reservoirs a safety valve which opens in case the pressure of the gas in the reservoirs should under special circumstances become too great.

I may also apply to these reservoirs any suitable device for preventing the passage of the gas into the pnematic tyre after a given pressure is exceeded.

It is not needful to describe the mode of charging my reservoirs as this is done by the ordinary methods.

Dated this 23rd day of December 1892.

HASELTINE, LAKE & Co.,
45, Southampton Buildings, London, W.C., Agents for the Applicant.

COMPLETE SPECIFICATION.

Improvements in and relating to Apparatus for Inflating Pneumatic Tyres for Wheels of Velocipedes and other Vehicles.

I, GEORGES LESOURD, of 36 Rue du Cherche Midi, Paris, in the Republic of France, Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement :—

My invention relates to apparatus for inflating pneumatic tyres for wheels of velocipedes and other vehicles by means of carbonic acid or other liquefied gas.

It is well known that nearly all wheels of velocipedes are now provided with pneumatic tyres forming an air chamber into which air is introduced at a pressure which varies according to the diameter of the tyre and the weight of the cyclist. On this pressure depends the proper operation of the apparatus.

The air chambers of these pneumatic tyres of various constructions have a nozzle containing a valve which opens inwardly.

When the pneumatic tyre is to be inflated this nozzle is put in communication with a small pump which is in most cases a hand pump. Whether this pump be absolutely free or be fixed to a rigid part of the machine or whether one of these rigid parts forms the body of the pump, its operation is always delicate and difficult especially when the pressure in the interior of the pneumatic tyre has attained a certain degree.

It is moreover liable to get out of order and, preventing the inflation, altogether render the machine unserviceable.

Some cyclists often ride under disadvantageous conditions with too slack or soft pneumatic tyres, because they try to use their pumps as little as possible.

In order to remedy these inconveniences I employ small reservoirs of variable capacity and with sufficiently strong walls for containing liquid carbonic acid or any other gas liquefied or at a very high pressure.

Liquefied gas has amongst other advantages that of always giving the same pressure as long as liquid is in the presence of gas.

This reservoir is provided with a cock suitably arranged and screwed or otherwise fixed either directly or by means of a small tube of copper or indiarubber upon the nozzle of the pneumatic tyre.

I may thus introduce into the pneumatic tyre the desired quantity of gas to obtain the proper degree of resistance which the cyclist is able to determine by hand.

It will be understood that my reservoirs may be of any desired form and capacity, and particularly of spherical form by reason of the high resistance it offers; and that they may be made of any desired material especially of aluminium so as to diminish the weight of the same as much as possible. For closing such reservoirs I may use any system of cock, valve or the like which may be deemed suitable. Besides the closing devices hereinafter mentioned by way of example I may particularly employ what is known as Stern's closing device which forms the subject of Letters Patent dated the 15th November 1889, No. 18273.

I will now proceed to describe certain special arrangements.

In order that the cyclist may not inflate the pneumatic tyre too much and cause its rupture I sometimes make reservoirs containing only as much gas as is necessary for a single charge.

In this case these very small reservoirs may be arranged in a box in rows of six, twelve or any desired number.

For each inflation the cyclist completely deflates the pneumatic tyre, fixes the reservoir upon the nozzle and allows the whole of the gas to pass into the interior of the tyre.

I may also place a certain number of these reservoirs upon a collector and use each reservoir in succession by putting the collector in communication with the pneumatic tyre.

In the accompanying drawing,

Figure 1 is a sectional view shewing one form of reservoir fitted to a pneumatic tyre.

Figures 2 and 3 are sectional views of modified forms of reservoir and the valve therefor.

Figures 4 to 7 are sectional views shewing details of construction hereinafter described.

Similar letters of reference denote corresponding parts in all the figures.

Referring now to Figure 1, A is the reservoir for liquefied gas, R a valve having a very long screwed spindle furnished with a point which can lift a ball B from its seat *i*, a nut E being provided for making a tight joint.

The gas escaping through a channel *o o* passes into the pneumatic tyre to which the apparatus is connected either directly or by means of a tube *t* furnished with two screwed caps C, C[1]. Or the tube *t* may be permanently secured in the orifice *o* as shewn in Figure 7.

The gas is led into the air tube of the tyre through a nozzle P.

Instead of the ball valve shewn in Figure 1 I may employ a simple spindle cock or valve R^1 as shewn in Figure 2 or a plug cock as shewn at R^{11} in Figure 3.

To avoid the possibility of rupture of the pneumatic tyre in these kinds of apparatus I sometimes provide a safety valve as shewn at S^1 Figure 4 where B^1 is a ball adapted to open the entrance to a channel K leading outwards and branching from the channel *o*, *o*. The said ball is held by a spring r^1 under suitable tension which can be regulated by a nut e^1.

This valve rises as soon as the pressure attains the desired limit in the pneumatic tyre, which is noticed by the escape of gas through the channels K.

In lieu of this valve or in combination with it I may employ a pressure gauge, secured for example at *m* Figure 5, although I am of opinion that such complicated devices are not very well adapted for practical purposes.

I sometimes provide upon the pneumatic tyre a second nozzle P^1 with a safety valve S (Figure 6) opening outwards and held by a spring *r* the tension of which may be regulated by a nut *e*. This valve is hermetically closed at ordinary times by a plug H which is removed only when the tyre is to be inflated.

Reservoirs of greater capacity and with a regulated outflow have the advantage of enabling the cyclist to always keep the pneumatic tyre in the desired state of hardness. In case it is deemed suitable I fix these reservoirs to a part of the velocipede or use one of these rigid parts as a reservoir.

In the case of reservoirs of large capacity which are used especially by merchants and manufacturers of velocipedes who have to effect many inflations and who use at present large pumps I may place upon these reservoirs a safety valve which opens in case the pressure of the gas in the reservoirs should under special circumstances become too great.

I may also apply to these reservoirs any suitable device for preventing the passage of the gas into the pneumatic tyre after a given pressure is exceeded.

This device consists of a regulator of any kind composed of two cylinders of different diameters, in which work the pistons *a* and *c* connected by a common rod. Upon this rod is a valve *b*. The space above the piston *a* and the space below the piston *c* communicate with the atmosphere. T is the pipe for the gas and T^1 is the pipe leading to the pneumatic tyre to be inflated.

The comparative size of *a* and *c* are such that when the pressure in the pneumatic tyre reaches a given limit the pistons and rod will be lowered and the valve *b* closed again. The gas at high pressure no longer communicates with the pneumatic tyre.

The reservoirs which I use are charged in the ordinary manner.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

First. The employment of reservoirs for entirely or partially inflating pneumatic tyres for wheels of velocipedes or other vehicles, said reservoirs being of variable dimensions, and filled with carbonic acid or any other gas either liquefied or at a very high pressure.

Second. The employment of reservoirs for inflating pneumatic tyres each of such reservoirs containing enough gas to properly inflate a pneumatic tyre once after said tyre has been completely deflated, substantially as described.

Third. The combination with a pneumatic tyre of a suitable number of separate reservoirs each of such reservoirs containing enough gas to properly inflate a pneumatic tyre once after such tyre has been completely deflated, all the said reservoirs being connected to the tyre by the same channel, substantially as described.

Fourth. The combination with a reservoir containing several charges, of a safety valve with or without a pressure gauge, substantially as, and for the purpose, specified.

Fifth. The employment of a safety valve placed on the pneumatic tyre itself, for the purpose specified.

Sixth. Securing the reservoir to a part of the machine or the employment of part of the machine itself as a reservoir, substantially as described.

Seventh. The combination with a reservoir of a device so constructed that when the pressure in the pneumatic tyre reaches a certain fixed limit the further delivery of gas from the reservoir is prevented, substantially as, and for the purpose, specified.

Eighth. The various modes of constructing the reservoirs and devices connected therewith, substantially as described with reference to the accompanying drawing.

Ninth. The employment of means substantially as described with reference to the accompanying drawing for the inflation of pneumatic tyres applied to the wheels of any light carriages.

Dated this 22nd day of September 1893.

HASELTINE, LAKE & Co.,
45, Southampton Buildings, London, W.C., Agents for the Applicant.

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